REMARKS

As a preliminary matter, in response to the Examiner's Restriction requirement, Applicants confirm the election of Group I, claims 1-3 and 5-7. Applicants reserve the right to timely file divisional applications based on the non-elected claims.

Reconsideration of this application and the allowance of rejected claims 1-3 and 5-7 are respectfully requested. Applicants have attempted to address all grounds for rejection in the Office Action dated October 28, 2009 (Paper No. 20081021) and believe that the application is now in condition for allowance. The specification has been amended to correct typographical errors. The claims have been amended to clarify the invention and to correct typographical errors.

Claims 1, 2, 6, and 7 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. More specifically, regarding claim 1, the Examiner asserts that the phrase "one line segment" is indefinite. Applicants respectfully disagree. Amended claim 1 recites, among other things, that a stack of alternately superconducting and insulating films comprises at least one line segment incorporating at least one terminal. As shown in, for example, Fig. 2a of the present application, a superconducting line LS is formed by placing a superconducting film L1 onto a substrate S. A plurality of alternately insulating and superconducting films is placed on the superconducting line LS, forming an inductive stack E (See Applicants' Specification, p. 7, l. 15-17). After deposition, the films are etched to obtain the pattern shown in Fig. 3a, and including metalized contacts I1 and I2 (See p. 7, l. 24-26). That is, when the stack E is placed on the superconducting line LS, the

superconducting line becomes one of the layers of the stack. Thus, the finished stack E comprises at least one layer having the form of a line segment, namely the superconducting line LS, and the superconducting layer includes at least one terminal.

Moreover, the Examiner states that the term "plot" recited in claim 1 is not clearly defined. In response, Applicants have amended claim 1 to replace the term "plot" with the word "terminal."

With respect to claim 2, the Examiner asserts that the phrase "perfectly crystallized" is indefinite. In response, Applicants respectfully assert that the phrase "perfectly crystallized" has meaning to those of skill in the art. A perfect crystal is one that has at least no linear or planar defects in the crystal structure. Thus, a "perfectly crystallized" layer of superconductive material is one in which all atoms of the crystal structure are positioned correctly, so that the crystal structure of the superconductor material is free of defects. In the field of crystallography applied to growth of superconductors, it is known to visualize atom position using, for example, a Transmission Electron Microscope, so that the crystal structure of the superconductor material can be verified to be perfect. For example, the enclosed publication by Lebedev et al., *Structure and Properties of the* $YBa_2Cu_3O_{7-X}/LaAlO_3$ *Superlattices*, J. Applied Physics, vol. 50, No. 10, pp. 5261-5267 discloses that for superlattice films, there is a need to have perfectly crystalline thin layers with no interlayer connection present. Moreover, Lebedev teaches that transmission electron microscopy is used to determine the atomic structure of layers and interfaces (See Lebedev, p. 5262, lines 4-7 of the second full paragraph).

Regarding claims 6 and 7, the Examiner states that the phrase "the latter" is indefinite because it is unclear which claim limitation the phrase refers to. Accordingly, Applicants have replaced the phrase "the latter" with the unambiguous phrase "the stack" in claims 6 and 7. For all of the above reasons, Applicants respectfully request withdrawal of the § 112 rejection of claims 1, 2, 6, and 7.

Claims 1, 3, and 5 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Ishikawa et al. (US 6,066,598). Ishikawa is directed to a superconducting multilayer electrode. The reference shows, in Fig. 1, a transmission line made up of thin film superconductors 1, 2, 3, 4, and 5, and thin film dielectrics 30-1, 30-2, 30-3, and 30-4 alternately laminated (See Ishikawa col. 3, l. 53-58). The transmission line is formed on a dielectric substrate 10, with a ground conductor 11 formed on the bottom surface of the substrate (col. 3, l. 58-61). An input terminal 12 is also formed on the dielectric substrate 10, such that the input is separated from the transmission line by a gap g1. Similarly, an output terminal 13 is formed on substrate 10 such that it is separated from the transmission line by a gap g2 (col. 5, l. 1-11). The gaps g1 and g2 enable the separated parts to electromagnetically couple to one another by capacitive coupling. Further, Ishikawa shows in Fig.2, that a transmission line is separated from a strip conductor 41 formed on the dielectric substrate 10 by a gap g3, so that the transmission line is electromagnetically coupled to the strip conductor (col. 5, line 62 – col. 6, line 5). Thus, the transmission line is not in contact with the input terminal 12, the output terminal 13, or the strip conductor 41.

In contrast, amended claim 1 of the present application recites, among other things, a stack including a line segment that incorporates at least one terminal of the component. That is, one or more of the component terminals must be incorporated into one of the layers of the stack. As discussed above, Ishikawa discloses that a transmission line is separated from an input terminal 12 by a gap g1, and that the transmission line is separated from an output terminal 13 by a gap g2. Similarly, the transmission line is separated from a strip conductor 41 by a gap g3. That is, the transmission line disclosed by Ishikawa does not include a stack layer incorporating a terminal. Thus, Ishikawa does not disclose each of the features recited in claim 1 of the present application.

Accordingly, the rejection based on Ishikawa is respectfully traversed. For at least the reasons identified above, Applicants respectfully submit that claims 1, 3, and 5 are each patentably distinguished over Ishikawa, and are in condition for allowance.

Claim 2 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishikawa in view of Lee et al., *Epitaxially Grown Sputtered $LaAlO_3$ Films* (hereinafter, "Lee"). Claim 2 depends from claim 1, and consequently includes all the features of claim 1, plus additional features. Accordingly, Applicants traverse the rejection of claim 2 for the reasons discussed above, and because Lee fails to remedy the deficiencies identified above with respect to the rejection of claim 1.

Lee is cited as disclosing that the material for superconducting and dielectric film is crystallized. Lee is directed to a process for growing thin films of $LaAlO_3$ using a sputtering technique. Lee discloses formation of a tri-layer film including two outer layers of

$YBa_2Cu_3O_7$ (YBCO) and a central layer of $LaAlO_3$. When the interfacial areas of between the layers were examined using transmission electron microscopy cross sectioning, it was found that all three layers showed sizable regions of single crystal epitaxial growth with the YBCO *c*-axis perpendicular to the substrate. However, Lee fails to disclose or suggest incorporating a terminal into one of the layers. Accordingly Ishikawa and Lee, taken alone or in combination, fail to disclose or suggest all of the features of claim 2. For at least these reasons, Applicants respectfully submit that claim 2 is patentably distinguished over Ishikawa and Lee, and in condition for allowance.

Claims 6 and 7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishikawa in view of Sung et al. (US 5,750,474). "). Claims 6 and 7 ultimately depend from claim 1, and thus include the features of claim 1, plus additional features. Accordingly, Applicants traverse the rejection of claims 6 and 7 for the reasons discussed above, and because Sung fails to remedy the deficiencies identified above with respect to the rejection of claim 1.

Sung is directed to a method for manufacturing a superconductor/insulator/superconductor Josephson tunnel junction. The junction includes a lower electrode 3, a barrier layer 5, and an upper electrode 6, arranged so that the barrier layer is disposed between the lower electrode and the upper electrode. However, Sung is silent regarding any input or output terminals used for the junction. Moreover, the lower electrode 3 and upper electrode 5 are disposed so that they are offset relative to one another, not stacked. Accordingly Ishikawa and Sung, taken alone or in combination, fail to disclose

or suggest the features of claims 6 and 7. For at least these reasons, Applicants respectfully submit that claims 6 and 7 are patentably distinguished over Ishikawa and Sung, and in condition for allowance.

In view of the above remarks, the application is respectfully submitted to be in allowable form. Allowance of the rejected claims is respectfully requested. Should the Examiner discover there are remaining issues which may be resolved by a telephone interview, he is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,

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